

REMARKS

The Official Action of 4 January 2008 has been carefully considered and reconsideration of the application as amended is respectfully requested.

Claim 1 has been amended to incorporate the recitations formerly in claim 11 (now canceled). The claims have also been amended to remove the bases for the rejections under 35 USC 112 second paragraph appearing at paragraphs 1A-C on page 2 of the Official Action. Support for the amendment to claim 4 appears in the specification as filed at, for example, the first full paragraph on page 20. All claims as amended are respectfully believed to be sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

New claim 19 has been added more completely to define the subject matter which Applicants regard as their invention. Claim 19 draws support from the Examples in the specification and is commensurate in scope therewith. In the Examples, the inks of Examples 1 to 26 and Comparative Examples 1 and 2 comprise the dispersions described in the specification at pages 40-53 and other components described in Tables 1-1 and 1-2 on pages 53-54. Each of the inks was evaluated for storage stability in accordance with the Evaluation method described on page 56, which measures the fluctuation in viscosity difference between inks stored as described and claimed. Table 2 on page 27 provides the results of the storage stability evaluation. The results show the criticality of controlling the molar ratio of the unneutralized repeat units to total (neutralized and unneutralized) repeat units for achieving the best storability (grade of "AA" or "A"). As can be seen with respect to

Comparative Examples 1 and 2, wherein all of the carboxylic acid groups were neutralized (see paragraph bridging pages 67-68), the storage stability was poor in the evaluation (grade of "C").

The claims stand rejected under 35 USC 102(b) as allegedly being anticipated by Yeates et al or under 35 USC 103(a) as allegedly being unpatentable over Yeates et al either alone or in combination with Yamazaki. Applicants respectfully traverse these rejections.

The claimed invention is based at least in part upon Applicants' discovery of the result-effective nature in achieving high storage stability of an ink composition of controlling the molar ratio of unneutralized groups to total neutralized and unneutralized groups in a dispersing resin. As disclosed in the application on page 15, line 17 onwards, when the repeating unit structure (1) is too large, dispersion of the dispersing resin is unstable so that the coloring agent dispersion is likely coagulated. Conversely, when the repeating unit structure (1) is too small, the whole of the dispersing resin is solubilized in water, and the liberated resin that does not adhere to the coloring agent increases, whereby a problem that ejection of the ink becomes unstable is liable to occur.

In contrast, the cited references do not show or suggest the recited molar ratio or the result effective nature thereof. Yeates discloses a composition comprising water-dissipatable acrylic polymer, water, colorant, a water-miscible organic solvent and a water-immiscible organic solvent. The water-dissipatable acrylic polymer has

preferably been obtained from the polymerization of one or more olefinically unsaturated monomers having water dispersing groups.

Further Yeates discloses that the acid groups may be subsequently, or during formation of the polymer, fully or partially neutralized with a base containing a cationic charge to give a salt.

However, Yeates is silent about a molar ratio in the range of from 1% to 67% of the first repeating unit structure based on the sum of the first repeating unit structure and the second repeating unit structure. Moreover, Yeates does not show or suggest the result effective nature of this parameter in providing for excellent storage stability, as next discussed.

The object of Yeates is the provision of ink compositions, which are suitable for both thermal and piezo ink jet printers, having high color strength and produce images having a high light-fastness and water-fastness when printed on a substrate. Although Yeates et al refer to "Ink stability" in their examples, they do not recognize the reason for poor ink stability as is clear from Table 1 on page 14, wherein both inks of an Example ("Ink 6") and of the Comparative Examples ("Ink C1" and "Ink C2") are described as "poor" ink stability. Nor is there anything in Yeates to show or suggest that such stability may be improved by controlling a molar ratio of unneutralized groups to the sum of neutralized and unneutralized groups in the dispersing resin of the ink compositions described therein.

In the absence of anything in Yeates to show or suggest the result effective nature of the claimed variable (molar ratio) in improving storage stability, and since the cited secondary reference cannot supplement this deficiency in the primary reference, Applicants respectfully submit that the references cannot set forth even a *prima facie* case of obviousness for the invention as claimed. See MPEP 2144.05(II)(B) (“A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.

In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result- effective variable.”).

With particular respect to claim 19, Applicants respectfully note that the claim is additionally patentable in view of the evidence in the specification which shows the unexpectedly advantageous results in storage stability that can be achieved with the claimed aqueous ink composition. As discussed above, claim 19 is commensurate in scope with the evidence in the specification. Moreover, the evidence in the specification is with respect to ink compositions of the Comparative Examples (Inks C1 and C2) that differ from the ink compositions of the Examples only with respect to the proportion of neutralized groups and are thus closer than the prior art examples. See MPEP 716.02(e)(1) (“Applicants may compare the claimed invention with prior art that is more closely related to the invention than the prior art relied upon by the

examiner.”).

In view of the above, Applicants respectfully submit that all rejections and objections of record have been overcome and that the application is now in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,

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